

MSDII Testing – Recording Gait Test

Team: P15001: Active Ankle Foot Orthotic

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Related System: Record Gait

The idea behind testing this system is to make sure that the system can properly record the gait cycle. This will test two systems: the first system is the heel strike system and the second is the recording system that uses the EEPROM. By making sure that a constant gait can be recorded, this test is making sure that the Heelstrike can record the gait and also making sure that the gait can be stored and updated by the code that is being used.

Engineering Requirements

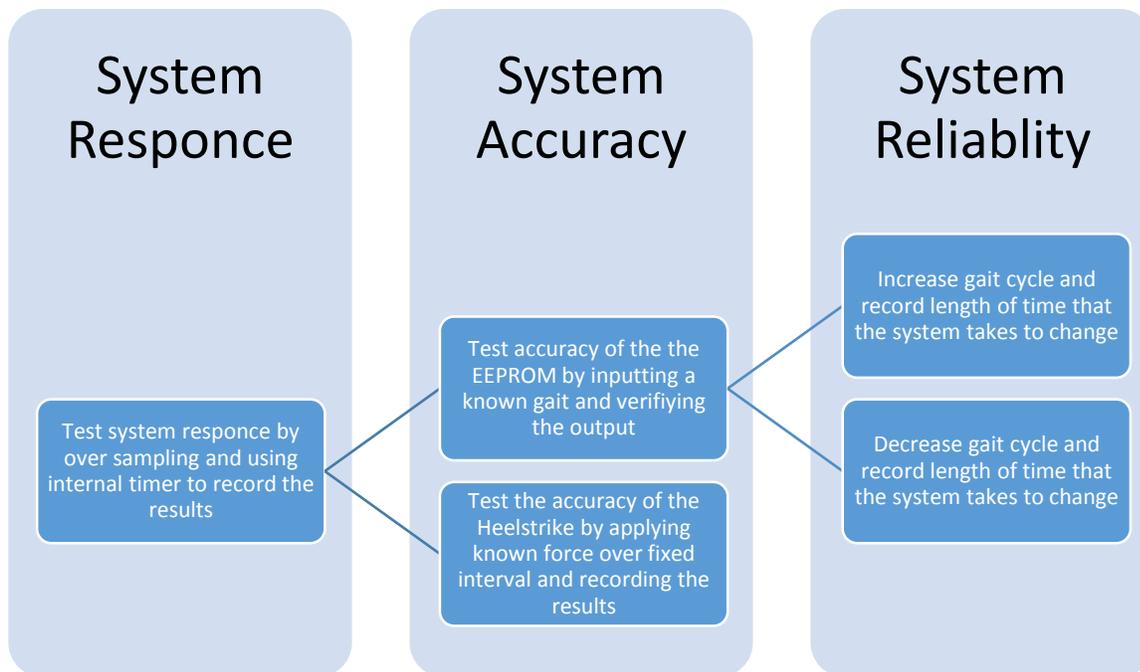
rqmt. #	Importance	Source	Engr. Requirement (metric)	Unit of Measure	Ideal Value	Marginal Value	Direction of improvement	Mapping to Functional Decomposition
ER11	3	ST3	Response time of Terrain Sensor	ms	100	200	▼	(ABBAC) Send Output or Signal

This test goes beyond the engineering requirements. However, this is required based on implicit functionality.

Testing Plan

The idea behind this testing is to input a synthetic gait cycle and look at the recorded gait time. To do this, the speed of the system should first be tested. This should be done by oversampling the terrain and strike sensors and record the results through an SD Card. This should also be verified using an oscilloscope.

The rest of the test will consist of first clearing the EEPROM and then setting the gait cycle to 2 seconds. The next part of the test would be to press the heel strike sensor once every 2 seconds. And the final part of the test would be to look at the output of the EEPROM and see how much it has changed from 2 seconds. This should be done for different periods of time: one minute, two minutes, and five minutes.



Equipment Required

There are no additional parts that need to be purchased for this testing. All that is needed is the prototype that is working. The timer internal to the microcontroller will be used and the SD card will be used to record the outputs. The only thing that would be needed is an external timer, but that is something that is readily available.

Data Collection Strategy

The data used for this test will be the same system that was used for the feasibility testing, the SD data acquisition.

In order to use this, the internal timer on the microcontroller needs to be verified. This should be done with an oscilloscope on the crystal on the board. The discrepancy that is recorded here will be an additional maximum error factor during final analysis.

Start Date: February 9, 2015 (MSD II – Phase 3)

End Date: February 27, 2015